

NOTES ON *AGERATUM* IN MESOAMERICA (EUPATORIEAE: ASTERACEAE)

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ABSTRACT

A key is provided for the 25 species of *Ageratum* credited to Mesoamerica. Four new species are described, *Ageratum hondurensense* sp. nov., *A. molinae* sp. nov., *A. munaense* sp. nov., and *A. tehuacanum* sp. nov.

KEY WORDS: Asteraceae, Eupatorieae, *Ageratum*, Mesoamerica, key.

Four new species are described that are needed for a treatment of the genus *Ageratum* in the Flora Mesoamerica. A preliminary English version of a key to the Mesoamerican species of *Ageratum* is also provided. The final version of the flora with its key will be published in Spanish.

Ageratum hondurensense R.M. King & H. Robinson, sp. nov. (Figure 1).

TYPE: HONDURAS. Morazán: Cerro de Hule, 20 km south of Tegucigalpa, open pine forest, El Chorrito, alt. 1500 m. Heads violet, herb 0.5-1 m. Oct. 27, 1966, A. Molina R. 18466 (HOLOTYPE: US; Iso-type: F). PARATYPES: HONDURAS. Morazán: El Chorrito, Cerro de Hule, 20 km south of Tegucigalpa, common in open pine forest and wet meadow, alt. 1500 m. Fls. lilac-violet, plant 0.5-1 m. Oct. 27, 1966, A. Molina R. 18462 (F, US); Choluteca: Between El Chinchayote and Comalí, thickets along Panamerican highway, common on moist bank, alt. 1100 m. Heads bluish or lavender, herb 1-1.5 m. Nov. 9, 1969. A. Molina R. & A.R. Molina 24582 (F, US).

Plantae suffruticosae erectae 0.5-1.0 m altae, multo ramosae. Caules virides vel rubescentes sparse vel dense puberuli. Folia opposita, petiolis 4-20 mm longis; laminae ovatae plerumque 3-6 cm longae 1.8-3.5 cm latae base obtusae vel subtruncatae margine



Ageratum hondurensis R. M. King & H. Robinson, holotype, United States Herbarium (US). Photos by Victor E. Krantz, Staff Photographer, National Museum of Natural History.

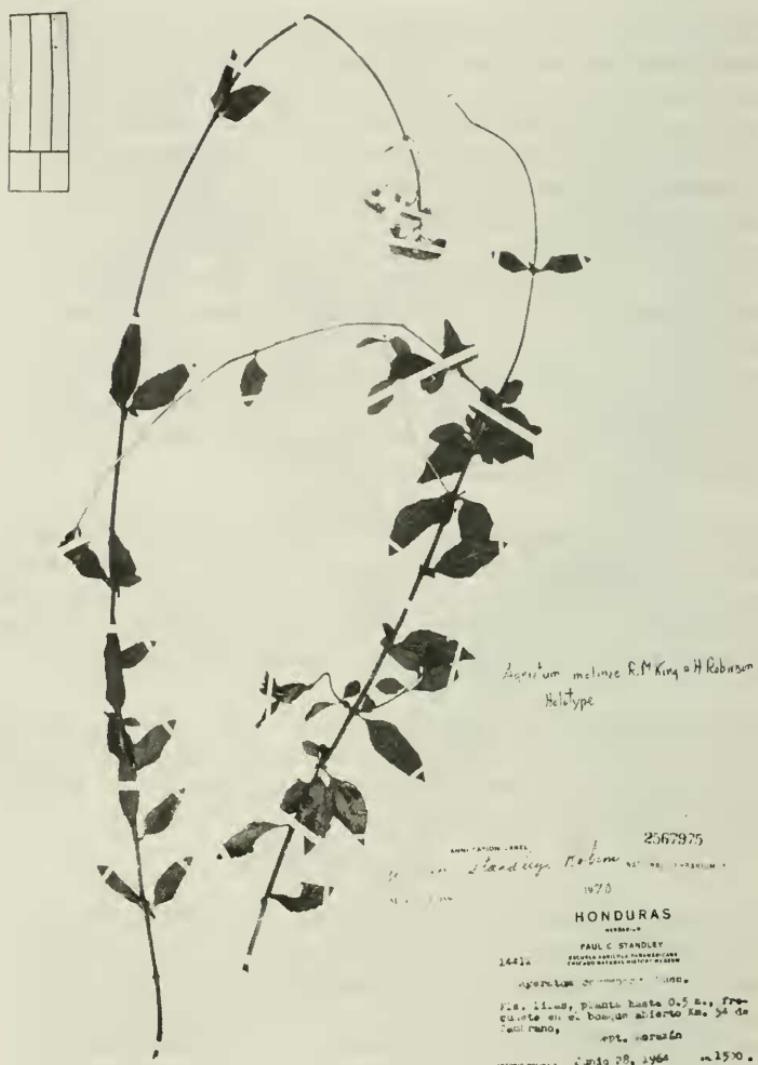
Figure 1. *Ageratum hondurensis* R.M. King & H. Robinson, holotype, United States National Herbarium (US). Photos by Victor E. Krantz, Staff Photographer, National Museum of Natural History.

crenulatae apice breviter acutae supra obscure virides breviter pilosulae sparse vel non glandulo-punctatae subtus leniter pallidiores dense glandulo-punctatae tenuiter minute puberulae 5 mm supra basem trinervatae; folia superiora mediocriter decreascentia et remotiora. Inflorescentiae in fasciculis ultimis aliquantum dense corymbosae, ramis basilaribus lateralibus oppositis quam axis apicalibus plerumque distincte brevioribus. Capitula 5-6 mm alta inferne abrupte rotundata; bracteae involucri ca. 25 eximbricatae lineares ca. 4 mm longae et 0.5-0.7 mm latae margine non distincte scariosae apice in bracteis interioribus angustae et curvatae omnino extus leniter puberulae sparse glandulo-punctatae; receptacula epaleacea. Corollae ca. 2.5 mm longae extus parvae pilosulae et plerumque inferne sparse glandulo-punctatae, tubis mediocriter latis ca. 1 mm longis. Achaenia ca. 1.8 mm longa glabra; pappus coroniformis denticulatus ad 0.2 mm altus.

The type specimen was originally distributed by the Field Museum under the name *Ageratum corymbosum* Zuccag., a Mexican species with coarsely pubescent leaves and larger heads. Relationship is closer to *A. rugosum* Coulter, which has denser erect pubescence on the leaf undersurfaces and has basal lateral branches of the inflorescence usually as long as the central part.

***Ageratum molinae* R.M. King & H. Robinson, sp. nov.** (Figure 2). HOLOTYPE: HONDURAS. Morazán: Km. 54 de Zambrano, frecuente en el bosque abierto. alt. 1500 m. Fls. lilas, planta hasta 0.5 m. Junio 28. 1964, A. Molina R. 14412 (US).

Plantae herbaceae perennes erectae ad 0.5 m altae, inferne leniter ramosae; caules brunnescentes hispiduli. Folia opposita. petiolis 2-4 mm longis; laminae oblongo-ovatae 2.5-3.5 cm longae et 1.0-1.5 cm latae base breviter acutae margine crenulatae apice breviter acutae supra leniter rugulosae lucidae pilosulae, pilis in basis persistentibus, cellulis in diametro ad 0.1 mm, subtus leniter pallidiores glandulo-punctatae in areolis membranaceae in nervis hispidulæ fere ad basem trinervatae. Folia superiora mediocriter decreascentia. Inflorescentiae aliquantum dense corymbosae, ramis oppositis basilaribus quam axis terminalibus, brevioribus ramulis ca. 1 mm longis. Capitula 4-5 mm alta inferne abrupte rotundata; bracteae involucri ca. 22 lineares 2.5-3.0 mm longae, ca. 0.5 mm latae, margine anguste scariosae apice anguste acutae leniter curvatae extus breviter pilosulae sparse glandulo-punctatae; receptacula epaleacea. Flores 25-30 in capitulo; corollae lilacinae 2 mm



Ageratum molinae R. M. King & H. Robinson, holotype, United States National Herbarium (US).

Figure 2. *Ageratum molinae* R.M. King & H. Robinson, holotype, United States National Herbarium (US).

longae extus plerumque in tubis glandulo-punctatae, tubis mediocriter latis ca. 1 mm longis. Achaenia ca. 1.5 mm longa glabra; pappus coroniformis ad 0.3 mm altus.

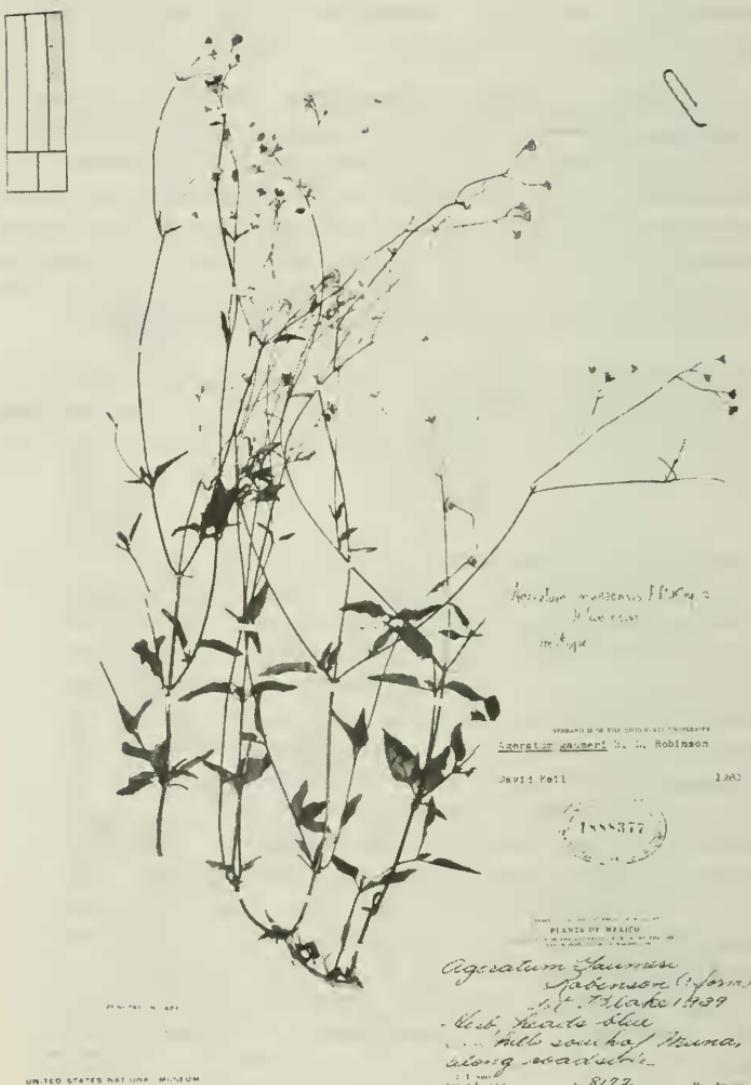
The type specimen was originally distributed by the Field Museum under the name *Ageratum corymbosum*, and has been annotated more recently as *A. standleyi* B.L. Robins. Both of the latter species have more pubescent leaves, and *A. corymbosum* is a more robust species, restricted to México, beyond the Mesoamerican range. The new species is actually closer to *A. hondurensis* in most characters, but is different by the erect hairs on the lower internodes of the stem and the veins of the lower leaf surface, by the blunt tips of the involucral bracts, and by unusually large cells of the upper leaf surface.

***Ageratum munaense* R.M. King & H. Robinson, sp. nov.** (Figure 3).

HOLOTYPE: MÉXICO. Yucatán: Hills south of Muna, along roadside. Herb; heads blue. May-Aug. 1938, C.L. Lundell & A.A. Lundell 8172 (US).

Plantae herbaceae subperennes erectae base decumbentes 0.3-0.4 m altae in et supra basem mediocriter ramosae; radices fibrosae vel adventitiae; caules rubescentes sparse minute puberuli. Folia opposita, petiolis 3-5 mm longis; laminae leniter carnosae ovatae, 1.5-2.5 cm longae, 0.5-1.0 cm latae, base obtusae margine crenulatae apice acutae supra et subtus in nervis minute puberulae subtus pallidiores et minute glandulo-punctatae base trinervatae. Folia superiore mediocriter decaescentia et leniter remotiora. Inflorescentiae laxe diffusae, ramis rigide divergentibus, pedicellis plerumque 5-20 mm longae, bracteolis subulatis ca. 1 mm longis. Capitula 4 mm alta inferne abrupte rotundatae; bracteae involucri ca. 18 oblongo-ovatae, 2.7-3.0 mm longae, ca. 0.8 mm latae, margine late scariosae apice rigide acutae erectae extus glabrae; receptacula epaleacea. Flores ca. 25 in capitulo; corollae ca. 1.8 mm longae in basis et lobis minute puberulae, tubis ca. 0.4 mm longis. Achaenia ca. 1.5 mm longa glabra vel subglabra; pappus nullus.

The type specimen has been previously identified as *Ageratum gaumeri* B.L. Robins. and as the variety *fallax* B.L. Robins. of that species. Both species are in the same group with short basal tubes on the corollas. However, the new species is closest to *A. lundellii* King & H. Robins., which has the same form of long, stiff, diverging pedicels. The reddish stems and the smaller, more carnose leaf blades in the new species might be differences from *A. lundellii*, expected of a plant growing in a more exposed habitat. The decumbent bases



Ageratum munaense R. M. King & H. Robinson, holotype, United States National Herbarium (US).

Figure 3. *Ageratum munaense* R.M. King & H. Robinson, holotype, United States National Herbarium (US).

of the stems and the basal trinervation of the leaf blades in the new species furnish additional distinctions.

Ageratum tehuacanum R.M. King & H. Robinson, *sp. nov.* TYPE: MÉXICO. Puebla: 9 km NW of San Lorenzo on the Tehuacán-Tecamachalco highway (No. 150). Limestone rock outcrop with low shrubs and *Yucca* prominent; elev. 1600 m. Florets blue. 6 Aug 1975, *G. & J. Davidse* 9308 (HOLOTYPE: US; Isotype: MO). PARATYPES: MÉXICO. Oaxaca: Valley of Oaxaca, alt. 5100-5800 ft. Sept. 8, 1894, *E.W. Nelson* 1213 (US); Puebla: Limestone hills near Tehuacán, 5200 ft. 30 July, *Pringle* 9522 (US); near Tehuacán, Aug. 1 & 2, 1901, *J.N. Rose & R. Hay* 5877 (US); Barren hills about Esperanza, alt. 2660 m, Aug. 17, 1905, *H. Pittier* 434 (US); Near Tehuacán, Aug. 30 to Sept. 8, 1905, *J.N. Rose, J.H. Painter, J.S. Rose* 10161 (US); Sierra de la Yerba, vicinity of San Luis Tultitlanapa, Aug 1907, *C.A. Purpus* 2547 (US); Mountains along route 125, ca. 7 miles north of Puebla-Oaxaca border. Occasional, up to 1/2 meter tall; open sun, dry sandy soil; flowers blue. 28 July 1960, *R.M. King* 3548 (US); Veracruz: Lepinziana, Orizaba, dry sunny limestone hills, Sept. 1857, *Botteri & Mohr* 911 (US); Mt. Orizaba, Maltrata, 5500 ft. Aug. 15, 1891, *H.E. Seaton* 346 (US).

Plantae erectae perennes plerumque 0.4-0.5 m altae mediocriter ramosae in radice palari; caules brunnei vel rubescentes dense albo-puberuli vel pilosuli. Folia opposita, petiolis plerumque 0.8-2.0 cm longis; laminae ovatae plerumque 2.5-5.0 cm longae et 1.5-3.5 cm latae, base obtusae, margine crenatae apice breviter acutae supra virides dense puberulae subtus dense albo-tomentosae et sub tomentis glandulo-punctatae 1-2 mm supra basem trinervatae. Inflorescentiae scaposae plerumque sine ramis infernis suboppositis vel alternis, glomerulis ultimis dense corymbosis paucicapitatis. Capitula campanulata 6-7 mm alta inferne abrupte rotundata; bracteae involuci ca. 25, anguste oblongo-lanceolatae, ca. 5 mm longae et 0.7-1.0 mm latae, margine anguste scariosae, apice breviter rigide acutae extus dense albo-pilosulae; receptacula interdum in parte paleaceae. Flores ca. 50 in capitulo; corollae azureae 3.0-3.5 mm longae, extus plerumque dense glandulo-punctatae, tubis ca. 1 mm longis, lobis extus paucis vel multo pilosulis. Achaenia 2.0-2.5 mm longa glabra; pappus coroniformis denticulatus ad 0.4 mm altus.

The new species is what has been identified as *Ageratum tomentosum* (Benth. in Örst.) Hemsl. by most taxonomists (Robinson 1913; Johnson 1971), but the type of the latter, kindly loaned by Kew, matches a different species known from eastern Chiapas and central Guatemala. The true *A. tomentosum*

has shorter petioles, smaller and less densely clustered heads, narrower involucral bracts with curved narrow tips, and has no evident pappus. The type of *A. tomentosum* is cited from Candelaria, supposedly in Costa Rica, but that locality has been questioned by Johnson (1971) since no recent material of the genus with tomentose lower leaf surfaces is known from south of Honduras. Neither *A. tomentosum*, as presently delimited, nor *A. tehuacanum* is known closer to Costa Rica than Guatemala.

The short-acute involucral bracts and the slender, whitish tipped paleae of *Ageratum tehuacanum* are like those of other paleaceous species of *Ageratum* in México, but none of the latter have dense tomentum on the leaf undersurface. Johnson (1971) emphasized the taprooted nature of the species, a character that seems potentially very useful in the genus, but there are too many species in which the root character has not been recorded. Johnson established *A. tomentosum* var. *bracteosum* on the basis of some paleaceous specimens of the present species, but the presence of paleae seems limited and erratic in the species.

Key to the species of *Ageratum* in Mesoamerica

1. Receptacles with stiff paleae throughout cluster of florets.
 2. Leaves ovate to lanceolate, with base of blade abruptly narrowed into distinct petiole; with spreading trinervation. 5. *A. elassocarpum*
 2. Leaves elliptical to linear, with base of blade gradually narrowed into indistinct petiole; with trinervate veins becoming longitudinal above.
 3. Lower internodes and leaf bases strongly hirsute with coarse, large celled hairs. 4. *A. echiooides*
 3. Internodes and leaf bases pilosulous to puberulous with slender hairs or subglabrous. 20. *A. platylepis*
 1. Receptacles epaleaceous or with bracts inside only outermost florets.
 4. Basal tube of corolla short, 0.5 mm long or less; inflorescence diffuse, sparsely branched.
 5. Pappus often present; lower internodes hirsute with coarse, large celled hairs; branches of inflorescence with few laxly ascending branches, with numerous linear bracts.
 6. Involucre ca. 3 mm high; leaf blades somewhat carnose; pappus when present, of numerous short scales. 13. *A. maritimum*
 6. Involucre ca. 2 mm high; leaf blades strictly herbaceous; pappus when present, usually of 5 subulate scales. 7. *A. gaumeri*

5. Pappus absent; lower internodes puberulous to pilosulous with fine hairs; branches of inflorescence stiffly diverging, with shortly ovate to lanceolate bracts.
7. Stems reddish; leaf blades ca. 2-3 cm long, trinervate from base. 16. *A. munaense*
7. Stems brownish; leaf blades mostly 6-8 cm long, trinervate from distinctly above base. 12. *A. lundellii*
4. Basal tube of corolla 0.8 mm long or longer; inflorescence with some congested clusters of heads.
8. Lower stems densely hirsute with coarse, large celled hairs and puberulous with few to many small hairs; outer surfaces of involucral bracts glabrous or pilose, never glanduliferous, hispidulous or tomentose.
9. Pappus lacking or shortly coroniform; sides of achenes without setulae, glabrous or slightly scabrid.
10. Involucral bracts glabrous, with entire, herbaceous margins; basal tube of corolla with few or no minute glands. 17. *A. oerstedii*
10. Involucral bracts usually pilose or pilosulous, with scarious, sometimes erose margins; basal tube of corolla with powdery cover of many minute stipitate glands. 14. *A. microcarpum*
9. Pappus of 5 separate, usually long subulate scales; sides of achenes setuliferous.
11. Corollas ca. 1.7 mm long; style branches filiform with blunt papillae forming 1/4 of width, usually pale. 3. *A. conyzoides*
11. Corollas ca. 2.3-3.0 mm long; style branches slightly broader distally, with small, pointed papillae, bluish. 10. *A. houstonianum*
8. Stems not hirsute with coarse, large celled hairs, with only smaller hairs of more uniform size; outer surfaces of involucral bracts sometimes glanduliferous, hispidulous or tomentose.
12. Plants maritime or from lower elevations; glandular punctations lacking; involucre often weakly rounded and not abrupt below, bracts mostly subulate with stiff tips; pappus when present, of 5 long subulate, separate scales.
13. Leaf surfaces and pedicels with sparse pilosity; leaf blades broadly elliptical. 6. *A. ellipticum*
13. Leaf surface and pedicels subglabrous with few hairs or glabrous; leaf blades narrowly elliptical or linear to ovate.
14. Leaf blades narrowly elliptical to linear, thickly carnose on veins; involucre tapering or slightly rounded at base; achenes strongly setuliferous. 18. *A. peckii*

14. Leaf blades usually ovate to rhombic ovate, thinly carnose with narrow, often sparsely puberulous veins; achenes with few or no setulae, even in pappiferous forms. 11. *A. littorale*
12. Plants not maritime, from elevations above 500 meters; obvious glandular dots present on leaves; involucre strongly, abruptly rounded below, bracts often linear, oblong, or broadly lanceolate with short or flexuous tips; pappus formed of a continuous crown or short lobes.
15. Leaf blades lanceolate, more than three times as long as wide; trinervation becoming longitudinal; glands of leaf undersurface usually deeply recessed in pits. 1. *A. chiriquense*
15. Leaf blades ovate, less than three times as long as wide; trinervation not becoming longitudinal above; leaf undersurface with emergent or scarcely recessed glandular dots.
16. Involucres without glands, glabrous or pilosulous; leaf surfaces sparsely pilose, never densely velutinous or tomentose; roots fibrous or adventitious on procumbent bases; species of Nicaragua, Costa Rica, or Panamá.
17. Involucral bracts lanceolate, 0.8-1.2 mm broad, with pubescence mostly on distal margins or median outer surface; petioles 2-10 mm long; pappus never with bristles. 21. *A. riparium*
17. Involucral bracts linear, 0.8 mm wide or less, with numerous hairs on outer surface; petioles up to 40 mm long; achenes with pappus often bearing a long bristle. 19. *A. petiolatum*
16. Involucre often with glands; leaf surface sometimes densely velutinous or tomentose; roots often from tubers or taproots; species of El Salvador, Honduras, Guatemala, or México.
18. Undersurfaces of leaves with hairs densest on veins, not totally obscuring green surface of areoles.
19. Branching of inflorescence alternate or unequal at base, lateral branches mostly longer than central axis; petioles 1-4 mm long. 8. *A. guatemalense*
19. Branching of inflorescence usually opposite and equal at base; petioles up to 20 mm long.
20. Leaf undersurface pilosulous with mostly erect hairs; basal lateral branches of inflorescence as long as central axis. 22. *A. rugosum*
20. Leaf undersurface finely and sparsely appressed puberulous; basal lateral branches of inflorescence shorter than central axis.

21. Lower internodes and veins of leaf undersurfaces with erect hairs; involucral bracts with blunt tips. 15. *A. molinæ*
21. Lower internodes and veins of leaf undersurfaces with appressed hairs; involucral bracts pointed. 9. *A. hondurensis*
18. Undersurfaces of leaves with whitish tomentum lying over areoles and obscuring green leaf surface.
22. Petioles 5-20 mm long; involucres mostly 5 mm high, shortly and stiffly acute; with taproot. 24. *A. tehuacanum*
22. Petioles 2-5 mm long; involucres mostly 4 mm high, with narrow, curved tips; base sometimes with tuber.
23. Leaf blades without glandular dots on upper surface; trinervation at 3-8 mm above base of leaf blade, with weaker secondary veins below
trinervation. 2. *A. chortianum*
23. Leaf blades usually with glandular dots on upper surface; trinervation at 0-2 mm above base of leaf blade, without weaker secondary veins below trinervation.
24. Upper surface of leaves densely hirtellous, with mostly erect hairs; stems grayish with spreading hairs. 25. *A. tomentosum*
24. Upper leaf surface puberulous with reclining hairs to nearly glabrous; stems puberulous with ascending hairs. 23. *A. standleyi*

The names and authorities of *Ageratum* species previously known from the Mesoamerican area are as follows: *Ageratum chiriquense* (B.L. Robins.) King & H. Robins., *A. chortianum* Standl. & Steyermark., *A. conyzoides* L., *A. echiodoides* (Less.) Hemsl. (incl. *Coelestina isocarphoides* DC.), *A. elassocarpum* S.F. Blake (incl. *A. nelsonii* [B.L. Robins.] M.F. Johnson), *A. ellipticum* B.L. Robins., *A. gaumeri* B.L. Robins., *A. guatemalense* M.F. Johnson, *A. houstonianum* Miller (incl. *A. mexicanum* Sims and *Alomia pinetorum* L.O. Williams), *Ageratum littorale* A. Gray (incl. *A. intermedium* Hemsl.), *A. lundellii* King & H. Robins., *A. maritimum* H.B.K., *A. microcarpum* (Benth. in Örsted) Hemsl., *A. oerstedii* B.L. Robins. (incl. *Coelestina latifolia* Benth. in Örsted., *A. oliveri* King & H. Robins.), *A. peckii* B.L. Robins. (incl. *A. radicans* B.L. Robins.), *A. petiolatum* (Hook. & Arn.) Hemsl. (incl. *Coelestina scabrius-*

cula Benth. in Örsted, *Ageratum reedii* King & H. Robins.), *A. platylepis* B.L. Robins. (incl. *Alomia guatemalensis* B.L. Robins., *Ageratum benjamin-lincolni* King & H. Robins.), *A. riparium* B.L. Robins. (incl. *A. rivale* B.L. Robins., *non* Sessé & Moçño, *A. panamense* B.L. Robins.), *A. rugosum* Coulte. (incl. *A. elachycarpum* B.L. Robins., *Alomia wendlandii* B.L. Robins., and *Alomia robinsoniana* L.O. Williams), *Ageratum standleyi* B.L. Robins. in Standley, *A. tomentosum* (Benth. in Örsted) Hemsl.

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